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What is claimed is:

- 1 1. A substantially pure polypeptide complex comprising a Clostridium
2 botulinum neurotoxin and more than one Clostridium botulinum type E neurotoxin
3 associated polypeptide.
- 1 2. A complex of claim 1, wherein the neurotoxin associated polypeptide has a
2 molecular weight of approximately 80 kDa and comprises the amino acid sequence
3 TNLKPYIIYD (SEQ ID NO:4).
- 1 3. A complex of claim 1, wherein the neurotoxin associated polypeptide has a
2 molecular weight of approximately 65 kDa and comprises the amino acid sequence
3 MQTTTLNWDI (SEQ ID NO:3).
- 1 4. A complex of claim 1, wherein the neurotoxin associated polypeptide has a
2 molecular weight of approximately 40 kDa and comprises the amino acid sequence
3 MRINTNINSM (SEQ ID NO:2).
- 1 5. A complex of claim 1, wherein the neurotoxin associated polypeptide has a
2 molecular weight of approximately 18 kDa and comprises the amino acid sequence
3 MKQAFVFEFD (SEQ ID NO:1).
- 1 6. A complex of claim 1, wherein the neurotoxin associated polypeptide has a
2 molecular weight of approximately 18 kDa and comprises the amino acid sequence shown in
3 Fig. 8 (SEQ ID NO:5).
- 1 7. A substantially pure Clostridium botulinum serotype E neurotoxin associated
2 polypeptide.
- 1 8. The polypeptide of claim 7, wherein the neurotoxin associated polypeptide
2 has a molecular weight of about 80 kDa.

1 9. The polypeptide of claim 8, wherein the neurotoxin associated polypeptide
2 comprises the amino acid sequence TNLKPYYIYD (SEQ ID NO:4).

1 10. The polypeptide of claim 7, wherein the neurotoxin associated polypeptide
2 has a molecular weight of about 65 kDa.

1 11. The polypeptide of claim 10, wherein the neurotoxin associated polypeptide
2 comprises the amino acid sequence MQTTTLNWDY (SEQ ID NO:3).

1 12. The polypeptide of claim 7, wherein the neurotoxin associated polypeptide
2 has a molecular weight of about 40 kDa.

1 13. The polypeptide of claim 12, wherein the neurotoxin associated polypeptide
2 comprises the amino acid sequence MRINTNINSM (SEQ ID NO:2).

1 14. The polypeptide of claim 7, wherein the neurotoxin associated polypeptide
2 has a molecular weight of about 18 kDa.

1 15. The polypeptide of claim 14, wherein the neurotoxin associated polypeptide
2 comprises the amino acid sequence MKQAFVFEFD (SEQ ID NO:1).

1 16. The polypeptide of claim 14, wherein the neurotoxin associated polypeptide
2 comprises the amino acid sequence shown in Fig. 8 (SEQ ID NO:5).

1 17. A substantially pure antibody that specifically binds to a Clostridium
2 botulinum type E neurotoxin associated polypeptide having a molecular weight of
3 approximately 80, 60, 45, or 18 kDa, or to a complex of any two or more of said neurotoxin
4 associated polypeptides.

1 18. A substantially pure antibody that specifically binds to a polypeptide complex
2 of claim 1.

1 19. A method of detecting a serotype E neurotoxin complex in a sample, the
2 method comprising:

- 3 (a) contacting the sample with an antibody of claim 17, and
4 (b) detecting antibody-bound polypeptide, if any, in the sample, the presence of
5 antibody-bound polypeptide indicating the presence of serotype E neurotoxin in the sample.

1 20. The method of claim 19, wherein the sample is a foodstuff.

1 21. The method of claim 19, wherein the sample is a gastrointestinal, blood, or
2 tissue sample obtained from a vertebrate animal.

1 22. A method of treating a patient who is suffering from a disease or condition
2 associated with excessive release of acetylcholine from presynaptic nerve terminals, the
3 method comprising administering to the patient a therapeutically effective amount of a
4 polypeptide complex of claim 1.

1 23. The method of claim 22, wherein the excessive acetylcholine release causes
2 undesirable contraction of smooth or skeletal muscle cells.

1 24. The method of claim 22, wherein the excessive release of acetylcholine causes
2 profuse sweating, lacrimation, or mucous secretion.

1 25. A method of treating a patient who is suffering from spasticity occurring
2 secondary to brain ischemia, or traumatic injury of the brain or spinal cord, the method
3 comprising administering to the patient a therapeutically effective amount of a polypeptide
4 complex of claim 1.

1 26. A method of treating a patient who is suffering from tension headache or pain,
2 the method comprising administering to the patient a therapeutically effective amount of a
3 polypeptide complex of claim 1.

1 27. A vaccine comprising a polypeptide complex of claim 1.

1 28. A method of vaccinating an animal against serotype E neurotoxin, the method
2 comprising administering to the animal an effective amount of the vaccine of claim 27.

1 29. A vaccine comprising a polypeptide of claim 7.

1 30. A method of detecting a Clostridium botulinum serotype E neurotoxin in a
2 sample, the method comprising:

3 (a) contacting the sample with a Clostridium botulinum type E neurotoxin associated
4 polypeptide (NAP) of claim 7 that specifically binds a serotype E botulinum neurotoxin and
5 thereby forms a NAP-neurotoxin complex, and

6 (b) detecting the NAP-neurotoxin complex, if any, in the sample, the presence of a
7 complex indicating the presence of serotype E neurotoxin in the sample.

1 31. A complex of claim 1, comprising the neurotoxin and neurotoxin associated
2 polypeptides having molecular weights of about 80 kDa, 65 kDa, 40 kDa, and 18 kDa.

1 32. The complex of claim 1, comprising the neurotoxin and neurotoxin associated
2 polypeptides having molecular weights of about 118 kDa, 80 kDa, 65 kDa, 40 kDa, and 18
3 kDa.